

Code No: R204124C

R20

Set No. 1

IV B.Tech I Semester Regular Examinations, January – 2024

SPECIAL PURPOSE VEHICLES

(Automobile Engineering)

Time: 3 hours

Max. Marks: 70

*Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks*

UNIT - I

- 1 a) What are the primary differences between dumpers, articulated haulers and front-end loaders? [7]
b) What are the advantages and disadvantages of using skid steer loaders? [7]
(OR)
- 2 a) What are the key factors considered in the selection of a prime mover for dumpers in construction projects? [7]
b) Elaborate the significance of engine selection for dumpers. [7]

UNIT - II

- 3 a) Illustrate the different types of cranes commonly used in construction and their specific applications based on their design and functionality? [7]
b) How do tower cranes differ from mobile cranes? [7]
(OR)
- 4 a) How does the articulated truck's suspension system contribute to its performance and stability, particularly in rough terrains? [7]
b) Discuss the factors influencing the selection between articulated trucks and other hauling equipment like dump trucks or haulers in construction projects. [7]

UNIT - III

- 5 a) Explain the classification of tractors based on their power, utility and applications in agricultural practices. [7]
b) Outline the main components of a tractor [7]
(OR)
- 6 a) Discuss the working principles and mechanisms involved in top lifting harvesters and how they differ from traditional harvesting methods. [7]
b) Describe the key specifications and features of top lifting harvester for crop harvesting needs? [7]

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UNIT - IV

- 7 a) Describe the constructional features that differentiate various types of forklifts. [7]
b) How does the lifting capacity and load center of a forklift impact its operational capabilities? [7]

(OR)

- 8 a) Explain the distinguishing features and functionalities of utility vehicles used in industrial settings. [7]
b) What are the key considerations when selecting towing vehicles for industrial purposes? [7]

UNIT - V

- 9 a) Explain the specialized features and constructional details that make Main Battle Tanks formidable in combat. [7]
b) What are the challenges and trade-offs faced by engineers in designing MBTs? [7]

(OR)

- 10 a) Describe the primary functions and constructional features of gun carriers used in military operations. [7]
b) How do transport vehicles differ from other military vehicles and what are their key features that allow for the efficient transportation? [7]